

Atty. Docket No. PIA31205/ANS/US
Application No.: 10/764,905

Amendments to the Claims

Please amend Claims 1-5, cancel claim 6, and add new Claims 7-8 as shown below.

Listing of Claims

1. (Currently Amended) A method for forming ~~an air gap during a semiconductor metal line manufacturing process~~, comprising:

stacking a lower insulating layer, a lower metal line and an upper insulating layer;

patterning a first photosensitive film on the upper insulating layer;

using the patterned first photosensitive film as a mask, etching the upper insulating layer until at least a portion of the ~~upper~~ lower metal line is exposed;

filling an etched portion of the upper insulating layer with a nitride film;

patterning a second photosensitive film over the lower metal line and the nitride film;

using the second photosensitive film as a mask, etching the lower metal line until the lower insulating layer is exposed to form a lower metal line pattern;

depositing an IMD (Inter Metal Dielectric) layer on the lower metal line pattern and the nitride film, thereby; forming an air gap ~~within the IMD layer~~ between lines in the lower metal line pattern;

planarizing the IMD layer to expose the nitride film;

etching away removing the nitride film, thereby forming a contact hole in the IMD layer exposing an upper surface of the lower metal line;

filling the contact hole with a conductive material;

depositing an upper metal line over the conductive material.

2. (Currently Amended) A method as defined in claim 1, wherein depositing the upper metal line ~~is performed by~~ comprises an Al/Cu damascene process.

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3. (Currently Amended) A method as defined in claim 1, further comprising removing the first photosensitive film after etching the upper insulating layer.

4. (Currently Amended) A method as defined in claim 3, further comprising removing the upper insulating layer after filling the etched portion of the upper insulating layer with the nitride film and before patterning a second photosensitive film.

5. (Currently Amended) A method as defined in claim 4, further comprising removing the second photosensitive film before depositing the IMD.

6. (Canceled)

7. (New) A method as defined in claim 1, further comprising, after depositing the IMD and before removing the nitride film, planarizing the IMD layer sufficiently to expose the nitride film.

8. (New) A method as defined in claim 1, wherein the nitride film is removed by wet etching.